

CLAIMS

1. A method for the production of metal
5 coated steel products, comprising the steps of :
 - providing a steel product with a metallic coating,
 - adding an additional metallic element to said coating,
followed by a step of
 - subjecting said product to a thermal treatment,
- 10 characterized in that :
 - prior to the addition of said additional element, said product is subjected to a plasma treatment, for cleaning and activating the surface of said coating,
 - said additional element is added through a physical
15 vapour deposition technique,
 - said thermal treatment is applied by directing high energy infra red radiation towards the outer surface of said coating.
2. The method according to claim 1, wherein
20 said metallic coating is chosen from the group consisting of : a Zn-coating, an Al-coating, a Zn-Al coating.
3. The method according to claim 1 or 2,
wherein said additional metallic element is Mg, and wherein
25 said Mg is added through sputtering or evaporation under low pressure.
4. The method according to any one of claims
1 to 3, wherein said plasma treatment is a Dielectric Barrier Discharge (DBD) plasma treatment, taking place at a pressure of between 0.1bar and 1bar, under an atmosphere
30 consisting of N₂ or of a mixture of N₂ and H₂.
5. The method according to any one of claims
1 to 3, wherein said plasma treatment takes place under vacuum.

6. The method according to any one of claims 1 to 5, wherein said thermal treatment is given under an inert atmosphere.

7. The method according to any one of claims 5 1 to 5, wherein said thermal treatment is given under air.

8. The method according to any one of claims 1 to 7, wherein said product is a steel sheet.

9. The method according to claim 8, wherein said infra red radiation is directed towards one side of 10 said sheet, during a time interval between 5 and 10 s.

10. The method according to claim 8, wherein said infra red radiation is directed towards both sides of said sheet, during a time interval between 3 and 8s.

11. The method according to any one of the 15 preceding claims, wherein the energy density of said infra red radiation is at least 400kW/m².

12. Apparatus for performing the method of any one of claims 1 to 11, comprising :

- a means for performing a plasma treatment on a metal 20 coated product,
- a means for adding an additional element to said coating by using a physical vapour deposition technique,
- a means for directing high energy infra red radiation towards the outer surface of said coating, after adding 25 said additional element.